

“Biosphere reserve” - the Actual Research Subject of the Sustainable Development Process”

Gabibulla R. Khasaev^a, Marina Yu. Sadovenko^b and Roman O. Isaev^c

^aSamara State Economic University, Samara, RUSSIA; ^bCorporation “Cultural Russia, Holy Ground” (CORUS), Samara, RUSSIA; ^cSamara National Research University, Samara, RUSSIA

ABSTRACT

The relevance of the analyzed issue is caused by the growing slippage of research funds of sustainable development in its practice. The purpose of the article is the theoretical basis of the biosphere reserve as a scientific research subject that is relevant to rules of the scientific activity. The leading approach to the study of this issue is the use of the theoretical and active approach. Tools of this methodological approach can determine the subject and content of the main “blocks” of the scientific subject - “the biosphere reserve”. Results of the research include: 1 - the analysis of the previous use of the organizational form of “the biosphere reserve”; 2 - the actual rationale for its purpose. This research justifies the function of the biosphere reserve as a scientific subject of applied research for sustainable development. The authors also justify a particular object (“activity” as opposed to “nature”) for the subject of “the biosphere reserve”. The contents of the article may be useful for specialists in the field of the scientific research methodology and regulatory support of sustainable development.

KEYWORDS

Biosphere reserve, biosphere ground, activity, subject of research, sustainable development

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Introduction

Establishing a context

In the world of science and technology research results are evaluated in terms of their pragmatic or organizational implementation. However, in the culture of humankind there are areas where the research is an independent process, requiring the formation of its own methodology (Ponomarev, 2014).

CORRESPONDENCE Marina Yu. Sadovenko  sadovenko14@gmail.com

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Today “sustainable development” has become a familiar phrase. It is necessary to “update” sustainable development as a field of research with its own means and methods.

The geopolitical theory of sustainable development has been formed and recognized. The practice of sustainable development is forming independently. Its results are not systematized into a single object of the research. The study of sustainable development by means of natural sciences promotes such traditional subjects as “nature” and “person.” The issue of sustainable development is the lack of its own scientific subject. This subject should be developed in strict compliance with a complex theory of variable-based practice of sustainable development.

Reviewing the literature

F.A. Dzhereshtieva (2010) discusses the insufficient use of concepts in case when the category of sustainable development is included in the research process of the unit of socio - economic sciences. “There are a number of approaches to define sustainable development, reflecting its key economic aspects. Among them: a development that does not involve additional costs for the next generation; a development that minimizes negative effects, externalities between generations; a development, which provides a constant simple and expanded reproduction; a development, in which mankind should exist only on the interest from natural capital, not affecting it” (Dzhereshtieva, 2010). The conceptual deficit in the category of “sustainable development” has caused the need for the reconstruction of original methodological tools of science. These research means requested for sustainable development, first of all, are “ontologies” and “subjects” (Sidorova & Shnyreva 2014). The value of ontologies for the interpretation of facts obtained in different scientific approaches is set in – “Flexible queries on relational databases using fuzzy logic and ontology” (Carmen Martínez-Cruz, Nogueraa & Vilab, 2014).

“The paradigm” (Kuna, 2009) of sustainable development was formed at the intersection of philosophical humanism and practical conservation tasks of mankind. All studies of sustainable development in one way or another raise the question of “the type” of ontological foundations of sustainable development and “subjects”, where the practice of this research takes place. The research of sustainable development should have a special regulatory organization that allows you to transfer the results into the public field. Such an assertion is made by A. Kläy, A.B. Zimmermann & S. Schneider (2015): “If we postulate a need for the transformation of society towards sustainable development, we also need to transform science and overcome the fact / value split that makes it impossible for science to be accountable to society. ... We postulate that in addition to introducing transdisciplinarity, science needs to strive for integration of the normative aspect of sustainable development at the meta-level”.

The above-described issue to determine the ontological and substantive grounds for the objectification of research results in the field of sustainable development originated in the process of the specific own research on “The biosphere reserve - a systemic study of processes of social, economic and environmental development” (Khasaev & Sadovenko, 2016). “The biosphere reserve” was seen as the organizational and practical category in development

management. The study was supposed to gain knowledge about the rules of aggregation, and forms of these processes.

The conducted analysis of existing forms of knowledge about biosphere reserves and directions to use this knowledge caused unplanned results. "The biosphere reserve" from the standpoint of the UNESCO's standard is the system unit of sustainable development. The modality of obligation is projected into the future, "the World Network of biosphere reserves (WNBR) of the MAB program was established in 1976. As of 2015 it includes 651 biosphere reserves in 120 countries, including 14 cross-border biosphere reserves, located on the territory of two or more countries. In accordance with the Regulations on the WNBR in 1995, biosphere reserves should strive to become sharing of best practice centers in order to study and promote approaches to conservation and sustainable development on a regional scale. To this end, each biosphere reserve should combine three interrelated functions - preservation, development and creation of a material base - through appropriate zoning of its territory, which includes: (1) one or more core areas, which formally are set aside for long-term conservation goals; (2) surrounding buffer areas; (3) an outer transition area where public authorities, local communities and business entities are responsible for promotion and sustainable development" (Strategy program "Man and Biosphere", 2015).

The analysis of application principles of the biosphere reserve in specific biosphere reserves of the Russian Federation showed: today such biosphere reserve is a methodically equipped environmental unit. The latter circumstance is reflected in the linguistic expression "the biosphere reserve" - a synonym of "the nature reserve". "The biosphere reserve" – is a hybrid of "the nature reserve" and "the biosphere reserve", which arose in the operation of the sustainable development unit by environmental authorities. For example, the Central Siberian biosphere reserve stamps its scientific work as "Proceedings of the state nature biosphere reserve – Central Siberian". It is revealing the contents of a typical issue of scientists' works of this reserve: "Chapter 1: On the history of creation of the Central Siberian reserve". Chapter 2. "The environment, resources and monitoring of flora and fauna in protected areas in Central Siberia". Chapter 3: "From the experience of state natural reserves. Forest fauna". A resource book for the department of environmental education and school forestry" (Zyryanov & Kochkarev, 2014). The research, dedicated to the issues and objectives of sustainable development activities in the biosphere reserve, (in its interpretation of regulatory documents for the UNESCO), has not been identified for the entire period of publication of scientific papers "The Central Siberian nature reserve" (from 1988 to 2014.). The assumption of the possibility of various systemic organization development processes in the biosphere reserve was denied in the phenomenon of submission of all types of the development to the environmental approach and requirements of the environmental organization.

Facts of the nonspecific use of the term – "the biosphere reserve" in the environmental approach (not identical to "sustainable development") required interpretation and turn in the direction of the ongoing research.

The principal position was the hypothesis that "sustainable development" was formed as "a popular culture" and "the requirement of international relations". This meant the premature "withdrawal" of theoretical assumptions of



sustainable development from the scientific activity and the transfer of those in the sphere of public relations. The phrase "sustainable development" is an indicator of our time areas of production - from tourism to mining industry. In particular, the technical publication of Journal of Sustainable Mining is positioned as follows: "Journal of Sustainable Mining is dedicated to the key problems of contemporary mining, for which activities related to sustainable development are a great and important challenge. The mission of this journal is to promote and spread knowledge not only concerning the idea of sustainable development in mining, but most of all, specialist knowledge derived from national and international research as well as technological solutions and methods, in which this vital idea is implemented" (Elsevier, 2015).

Establishing a research gap

In the literature and discussions there are no methods of research processes (sustainable development), which are used as a means of preventing other processes (exhaustion of the planet's resources). The activity of sustainable development is described by means of natural sciences (the study of human impact) and technical subjects (rules of engineering structures). The formation of the interdisciplinary research in the UNESCO structure is determined by received results in the boundaries of original subjects. To develop the modern knowledge about sustainable development it is necessary to implement a logical transformation of its own concepts of sustainable development in theoretical scientific subjects. "The biosphere reserve" is the first case to develop its own scientific research subject for sustainable development.

To use "the biosphere reserve" as a scientific research unit of the sustainable development process, it is necessary to provide additional supplement of the methodological theory of sustainable development. Namely, it is necessary to choose the object relevant to sustainable development from the ontological data of modern science. The scheme of the object in the "restorative" scientific theory of sustainable development makes it possible to identify any problems of this research. The ontological scheme of sustainable development has to be competitive with the schemes of environmental and ecological organizations, which have existing regulatory framework.

Thus, the initial pragmatic difficulties in determining the normative reality of "the biosphere reserve" has led to the need to study the wider area - ontological foundations of sustainable development and the definition of "the type" of its object. "Sustainable development" is already qualified as "a process" that is referred to "the class" of system objects.

The further study of the biosphere reserve as a subject of the applied research requires "the finishing development" of the scheme of the scientific subject. This means determining the content of blocks - "ontology", "model", "methods", "description language" (Schedrovitsky, 1975). It is necessary to relate the relationship of "knowledge" and "facts" in the study of sustainable development.

Stating the purpose

The goal of this research: to introduce the biosphere reserve in research funds of sustainable development. The objectives of this research: 1. to study the development functions of the biosphere reserve by the UNESCO Programme

“Man and Nature”. 2. to determine the content of the scientific subject for the biosphere reserve: “ontologies”, “models”, “languages”, “methods”, “issues”, “objectives”. 3. to justify the principle of “simulation - research – activity” in the practice of sustainable development of Russian biosphere grounds.

Material and Methods

Research methods

In the course of this research the authors used the following theoretical methods: normative analysis, system and structural analysis, genetic analysis of knowledge development forms. To illustrate the object and subject of this research the authors used the graphical method.

The conducted research is based on the analysis of knowledge systems that make up the reality of sustainable development. The attraction schemes of methodological subject knowledge relates to theoretical studies. The research methodology includes: a) the basic theory; b) the ontological picture, b) general and specific research methods.

In the “basic theory” was used “the general theory” of activity. Foundations of the theory of activity are presented in the works of two research schools: Lvov-Warsaw School (“praxeology”) – T. Kotarbinsky (1972) and the Moscow Methodological Circle (“theoretical-activity”) – G.P. Shchedrovitsky (1975) approach.

The work of V.Ya. Dubrovsky (2010) lists the main points of the classical theory of activity. These terms are used in the function of the general methodological study and establishment of links between the formed research subject – “the biosphere reserve” - and the research object – “sustainable development”. In accordance with the classical structure of the scientific subject (Schedrovitsky, 1981), while developing the scientific interdisciplinary subject, the consideration of “the ontology research” takes the first place. The work of V.Ya. Dubrovsky (2010) proves the timeliness use of ontology activities for modern objects such as “sustainable development”: “Ontology activities were developed in the context of the problem of social and cultural situation in the mid-20th century. On the one hand, there was an urgent need of social and cooperative organization and integration of various spheres of activity. On the other hand, there were no a universal holistic worldview and a single picture of the world that could be the basis of such integration” (Dubrovsky, 2010). As the main “objectification” in the developed theory of activity has been put “the process of reproduction activities and translation of the culture”. In the above work includes “the abstract ontological scheme of activity” and systematic principle of its implementation: “... the reproduction is a unity (integrity) of the complex process of activities, updating and translation processes of the two elements which are united by the communication opposition “implementation – normalization”, and together they form the structure of procedural activities” (Dubrovsky, 2010). Private “objects of the research” in the scheme of reproduction activities and translation of the culture are: “the translation process of standards” and “the process of updating the standards,” “normalization”, “implementation.” “The abstract methodological scheme of activities” is presented in Figure 1 as a common methodological basis of research frontiers (Dubrovsky, 2010).

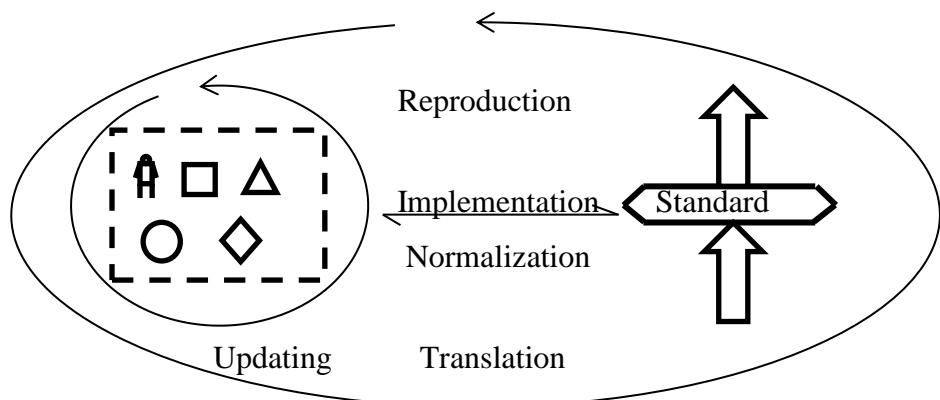


Figure 1. The abstract ontological scheme of activities
Source: V.Ya. Dubrovsky (2010).

In the context of “the abstract ontological scheme of activities” and its application to the study of sustainable development, “the biosphere reserve” was seen as a regulatory unit in: a) translation; b) mainstreaming (implementation) of sustainable development activities. The common method to describe the structure of the biosphere reserve of sustainable development is “the theoretical-activity approach” and its main scheme. The normative analysis in the structure of the regulatory-activity approach is the private one. In the classic work of G.P. Schedrovitsky (2005) “The regulatory-activity approach in the study of intellectual processes” the author defined the hierarchy and purpose of each of these methodological approaches and methods “The theoretical-active approach to the description of activity includes the regulatory-activity and normative analysis. The theoretical- activity approach takes the systems of activity as integrity - which is necessarily in terms of the reproduction process with the process of natural history and mechanisms of its functioning and development. The regulatory-activity approach can only work within certain limits. That is, when we take the base standards, but we see them as different models ... The correlation of them with the data is carried out not to show that this data is correct, but to reveal the data that does not meet ... In this case we obtain facts within the regulatory-activity analysis” (Schedrovitsky, 2005).

In addition to the innovative methodology of the theoretical-activity approach the authors used the version of the system approach (Schedrovitsky, 2014).

The application of this method has been defined by the information representation of the biosphere reserve as a unit of “the network of biosphere reserves” by the UNESCO. The system organization level of biosphere reserves in the global network, at the same time, assumed a particular representation model of the structure of the biosphere reserve at the national system level. “The world network” contains an abstract procedural organization of sustainable development processes. “The national system level” for the biosphere reserve meant a structural representation of activities for sustainable development. So the concept of “the biosphere reserve” was in the interstitial space: between the system theory and practical examples. There was a need to identify the

relationship between the concept of “the biosphere reserve” and other components of the category of “sustainable development”.

To determine the factors in the formation of the theoretical concept of “the biosphere reserve” it was used “the method of genetic testing” of knowledge development processes (Grushin, 1961). This method is used in determining the objects of “turning to sciences”, which now include the science of sustainable development: “Historicism as a general research principle pervades modern scientific thinking. It captures more and more subject areas. Sciences, which could not even think about “their” object many years ago, now they become historical in the broadest and at the same time in the strict sense of the word” (Grushin, 1961).

Experimental research base

The data for the research includes various forms of knowledge of sustainable development, the UNESCO's normative reality (UN) and national biosphere reserves of the Russian Federation and worldwide.

Programmable normative acts of the Russian grounds have been considered as a case study of the system modeling.

The structures of scientific communication were analyzed as a way to simulate the traditional research of sustainability development. As a case study of the information level of sustainable development the authors consider the third international conference “Innovative approaches to sustainable development and social - ecological and economic systems”, Samara - Togliatti, 15 - 17 June 2016.

Stages of research

This research has been conducted in three stages: 1. the genetic analysis of sustainable knowledge development. 2. the normative analysis of functions of the biosphere reserve. 3. identification of bases in order to use the biosphere reserve as a scientific subject of sustainable development. 4. identification of development tendencies of the scientific subject “the biosphere reserve”.

Results

The genesis of functions of the biosphere reserve

Justification of the biosphere reserve as a scientific research subject and a unit of sustainable development activities supposed to implement the “genetic” research line of knowledge systems that formed the theoretical position of the biosphere reserve. This research line was based on the comparison of the history of knowledge formation on sustainable development and changing content of the program “Man and Biosphere” (MAB), UNESCO (1971). Until 1972 the concept of “the biosphere reserve” took place in the work of the UNESCO. Natural areas were considered as special cultural monuments with the requirement to maintain “their original integrity”. The sequence analysis of requirements and principles of the biosphere reserve for the last thirty years has shown: “the biosphere reserve” was transformed into a special normative unit that differs from “a reserve” and “a national park” in the process of creating a culture of sustainable development. The published scientific manifesto “The Limits to Growth” (Meadows, Randers & Meadows, 2008) was developed in “The



principles of sustainable development" and "Agenda of the 21-st century" for twenty years (Report of the conference of the United Nations on environment protection and development, 1992). The biosphere reserve, as a special practice, followed the culture of sustainable development and launched its own network system history in 1976. In "Madrid Action Plan" (Madrid Plan, 2008) the biosphere reserve is interpreted as a properly functioning unit of sustainable development.

The sequential (for 45 years) assignment of requirements to the biosphere reserve with the content of sustainable development has changed the assignment of the biosphere reserve. From the environmental territorial unit with a list of species biodiversity and landscape features, the biosphere reserve has been transformed into a special standard of sustainable development. The biosphere reserve in regard to sustainable development "formed" a complex of functional features. "The biosphere reserve" has transferred from the practice of UNESCO's activities in scientific-theoretical "foundation" of the culture of sustainable development. The functions of the biosphere reserve were formed and alienated in the culture of sustainable development in the following sequence: "the preservation of natural areas - anthropogenic research - demonstration sites of sustainable development - economic support of all entities of sustainable development in the biosphere reserve".

Relationship stages of "the biosphere reserve" - "the culture of sustainable development"

The main result of the "genetic" research line was the periodization of relation phases – "the biosphere reserve - the culture of sustainable development". The scheme 2 – "the biosphere reserve: stages in the translation process and the implementation of sustainable development" - presents (from the top to the bottom) the sequence of them.

The first stage refers to the historical period of 70 - 80 years of the 20th century. The biosphere reserve from the territorial unit of the UNESCO program - "Man and Biosphere" (Scheme 2 – at the right) moves into the structure of the sustainable development activity. In the second stage (the 80s of the last century - 2000) there is the formation and transmission of knowledge about the appointment of the biosphere reserve in processes of sustainable development, and there is also a complete development of its functions. There is the embodiment of the second feature of "activity" – "implementation" of the culture of the biosphere reserve in the form of the global "network" of biosphere reserves (in the diagram at the left). The biosphere reserve acts as the program activities of sustainable development. The third stage (beginning 2000 - 2016) stands out as "the bad phase" in the functioning of the biosphere reserve in the activities of sustainable development. "The biosphere reserve" is presented in the culture of sustainable development in terms of knowledge, standards and samples. The "standard" structure of the biosphere reserve is formed, which is expressed in the zoning principle. This principle and the description of the activities in the "core", "buffer" and "transition" zone does not provide the actualization (realization) of sustainable development processes.

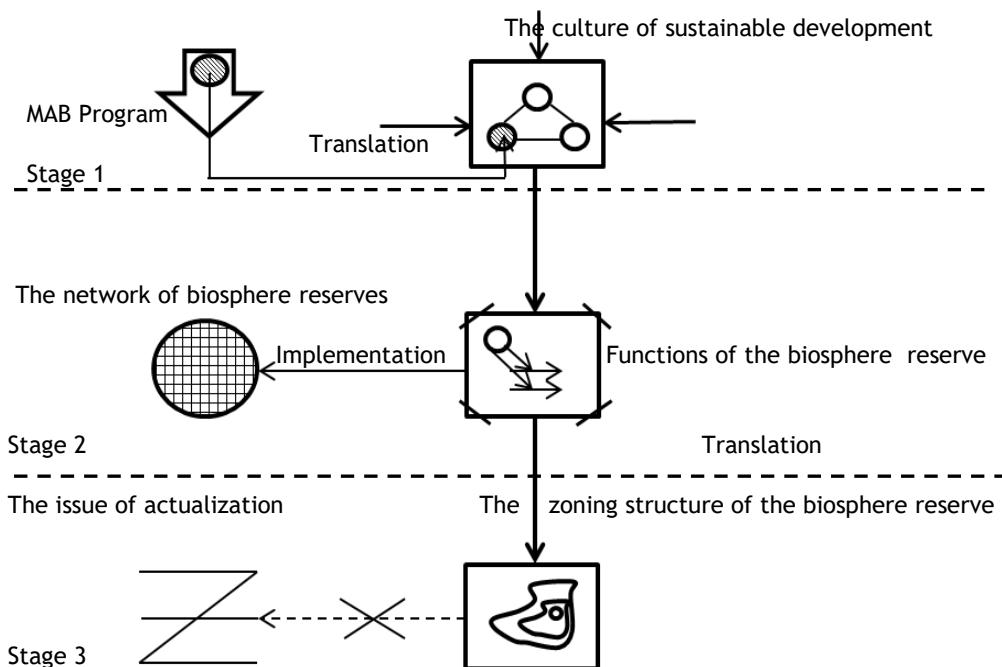


Figure 2. The biosphere reserve: stages in the translation process and the implementation of the culture of sustainable development.

Source: it is made by authors on the basis of G.P. Shchedrovitsky (1975).

The latter provision, and the “bad” characteristics of the modern functioning phase of the biosphere reserve - a unit of sustainable development have been received from the comparative analysis of 38 biosphere reserves of the Russian Federation, which have submitted their materials to the UNESCO (UNESCO Bulletin, 2010). The normative analysis of the zoning application of the biosphere reserve in a separate “unit” of the network of biosphere reserves for the first time revealed the possibilities of “the biosphere reserve” as a research subject of sustainable development. The actual result was obtained: the zoning of the biosphere reserve is used for the development of environmental activities, leaving the economic and social component of sustainable development outside the scope. The biosphere reserve – is a structural unit of sustainable development activities. The principles of sustainable development are fixed as “standards” of the biosphere reserve in the content of zones’ activity. These standards are translated into the culture (documents of sustainable development), but are not updated in real (situations and systems) biosphere reserves. This theoretical result indicates the “return” dynamics of “the biosphere reserve” in the past - in the reality of the first environmental steps of the MAB program.



The use of the biosphere reserve as a specific subject of sustainable development has allowed us to receive one more result. The analysis of the reports for the UNESCO sampling biosphere reserves of the Russian Federation showed the exception of "the man" from the object of sustainable development (in 35 of 38 reserves). The reason for this situation was the turn of the environmental public awareness. "The man" has transformed into "the anthropogenic factor" from "the member" of sustainable development in the structure of biosphere reserve activities. Such actual and theoretical situation is completely contrary to the "first principle of sustainable development": "Concern for people is at the heart of sustainable development. They are entitled to a healthy and productive life in harmony with nature" (Report of the conference of the United Nations on environment protection and development, 1992).

Historical conditions of realization of biospheric reserve - a cultural unit of sustainable development in the Russian Federation

The theoretical approach to the analysis of sustainable development which is used in the research comprises the principles of "historicism" and "lack of activity agent". The foundation of this provision meant that to perform their functions each national biospheric reserve, a participant of sustainable development has to take into account historical conditions. Positive change of historical conditions justifies models' formation of the organization and research in national biospheric reserves. Their negative change assumes further broadcasting in culture of sustainable development of organization abstract norms of biospheric reserve without their realization.

For biospheric reserves of the Russian Federation "positive change" of historical conditions was recorded in June – July, 2016. It is reflected in normative documents of the national level – the Federal law № 254 of July 3, 2016 and the Project "Rules of creation of a biospheric ground on the territory of a natural biospheric reserve". The Federal Law № 254 corrected "The law on especially protected territories" by the right to create a biospheric ground in any part of "a biospheric natural reserve". The project of the Government Resolution of the Russian Federation "On the approval of Rules of creation of biospheric grounds" (as of 09.08.2016) contained a position of a "Customer" with projection and creation of the function on the territory of natural biospheric reserves of objects of artificial type with the appropriate infrastructure. Thus, a new structural unit, "a biospheric ground" was introduced which could use any "part" of zoning of a biospheric reserve to create the structures which can correspond to social and economic profiles of sustainable development.

The analysis of content of reference documents represents a new cultural and historical role of "a biospheric ground", a concept with initially "narrow" opportunities (Kudaktin & Starch, 2007). Now, "The biospheric ground in the Russian Federation" is a forming national unit that supplements traditional processes of nature protection activity before sustainable development.

Before analyzed period "a biospheric ground" was considered as an extra area of national reserves. It assumed the experimental studying of various forms of impact of the person on the environment and formation of compensatory technologies. "The biospheric ground" in the structure of "a biospheric reserve" (under the law and according to formation rules) has another meaning. This "meaning" is defined that "a biospheric ground" is located in the structure of "a

"biospheric reserve". The reserves that are included into worldwide network have the status of "a biospheric reserve" with the right of creating only biospheric reserves. The logical operator – "biospheric" - builds the relations between three types of structures (a reserve, a reserve, a ground). Together with the development of the regulatory base of the national level, application of such operator enables to staticize the aspect of social and economic organization in all three structures. The right for economic activity and "social consumption" in the biospheric ground staticizes the completeness of sustainable development in the biospheric reserve in the conditions of environmental policy.

"The biospheric reserve" is not a scientific, but organizational subject yet. It allows defining the nature of the relations of science and official management structures at the national level. In this research there is the hypothesis of two ways of organization of biospheric reserves.

One way assumes horizontal structure of the organization of the biospheric reserve. It is possible at developed forms of civil society and when the values of sustainable development are recognized as the principle of technological organization of the activity. In the real research such way was named "the organization through cooperation". For this way there is no problem of opposition of an ecological, economic and social component of activity of sustainable development in the biospheric reserve. The science at such way deals with the development of technological aspect: energy sources, preservation of water resources, organization of compensated consumption of natural resources. This "way" can be considered and as a "final" phase in the organization of functioning of the biospheric reserve.

Other way of the organization assumes immediate and straightforward participation of science in the creation of model type of a "biospheric ground" in the structure of the biospheric reserve. This way is based on the allocated research priority (and model isolation) of this or that component of sustainable development: social, economic, ecological. The science is treated as a "closing" sphere, "management through knowledge".

Methodological value of models and modeling for the formation of the biospheric reserve as an analytical object of sustainable development at the "network" and "national" levels

Distinguishing the "models of sustainable development" (an element of geopolitical content) and the "models of the biospheric ground in the structure of the biospheric reserve" (analytical device) is a methodological result of the research.

Research models in the structure of the biospheric reserve are blanks in the theory and methodology of sustainable development now. Such situation is explained by the fact that the models of sustainable development fall into a class of "normative strategic models". They are not checked for feasibility. Analytical models of the biospheric ground in the structure of the biospheric reserve are more complex. These models are divided into two main types. The first type of models are "polystructural" process models forming process complexes of sustainable development in the biospheric reserve. They include 1) structural models of biodiversity protection in the biospheric reserve, 2) structural models of social development of the biospheric reserve, 3) structural models of the economic organization of models 1 and 2. The second type of models are



operational models describing the sequence of actions to transform the natural reserve into a polyprocedural subject of sustainable development. "The biospheric ground" for the research of these two types of structures performs the functions of a natural laboratory. This loading of the "biospheric ground" brings the applied science into actual management of natural territories. Instead of "anthropogenous influence" (in the traditional application of the biospheric ground), using structural and operational models in the biospheric reserve allows studying "effectiveness of placement and organization" of complex processes of sustainable development taking national materials.

The meaning of a modeling method for the research of sustainable development in total "network" of biospheric reserves is defined by the opportunity of comparison of various "private" models of the national level, - biospheric grounds in the structure of the biospheric reserve. Similar models are formed, mainly, by the method of "cultivation" of unique structures of this or that biospheric reserve. In Russian language the collocation "biospheric ground" is used to define a place in which traditional environmental protection activity of the biospheric reserve can be replaced by "socially oriented" economically funded models. Systematization and excepting artifacts of functioning of similar models allows bringing up an issue of transition from territorial zoning to modeling biospheric reserves as standard units of organization and analysis of sustainable development. Similar analogs are formed in the history of education and health where there are several key models of technological and economic organization of specified fields of activity.

Problems of modeling processes of sustainable development in the biospheric reserve. The scheme of research organization in the object "biospheric reserve"

The problems of modeling of sustainable development arose on the comparison: a) common requirements to the organization of sustainable development and b) circumstances where it is implemented. The main "problematic" provisions in the field of models' application in the research of sustainable development are as follows:

- in the models of sustainable development there should be the activity based on "high needs" of a person and mankind in general (Maslow, 1954). All forms of the organization of similar activity including technological and economic forms should not break a natural homeostasis.

- until recently the history of sustainable development in the biospheric reserves was the history of environmental protection development with corresponding research of "an anthropogenous factor".

- in the biospheric reserve traditionally "modeling" is considered as an intervention in the natural organization of a natural object. The principle of configuration of natural and artificial components of techno and natural objects is not used.

The status "biospheric ground" in the structure of biospheric reserve and biospheric reserve introduces the norm of "artificial organization" of objects of sustainable development, in particular, socially oriented models. In this normative reality there is the place not only for natural sciences. There was a possibility to form research in the object "biospheric reserve" studying social, economic, technological forms of activity of sustainable development. On the

scheme 3 the place of different types of research in the biospheric reserve is displayed. The external circle symbolizes "the biospheric reserve". The arrow penetrating a circle designates the created process of environmental protection activity with the research of anthropogenous influence in the system of natural sciences.

The internal circle limits the place of the biospheric ground in the biospheric reserve. The symbol "house" placed in "the biospheric ground" is a "sign" of socially oriented model. Two vertical arrows designate two types and forms of research orientation of sustainable development processes. The first type is the "research of problems and tasks of technological organization of socially oriented models in the biospheric reserve". The second type is the "research of problems and tasks of economic organization of socially oriented models in the biospheric reserve". The dotted line designates "formed sphere of research of sustainable development in the biospheric reserve".

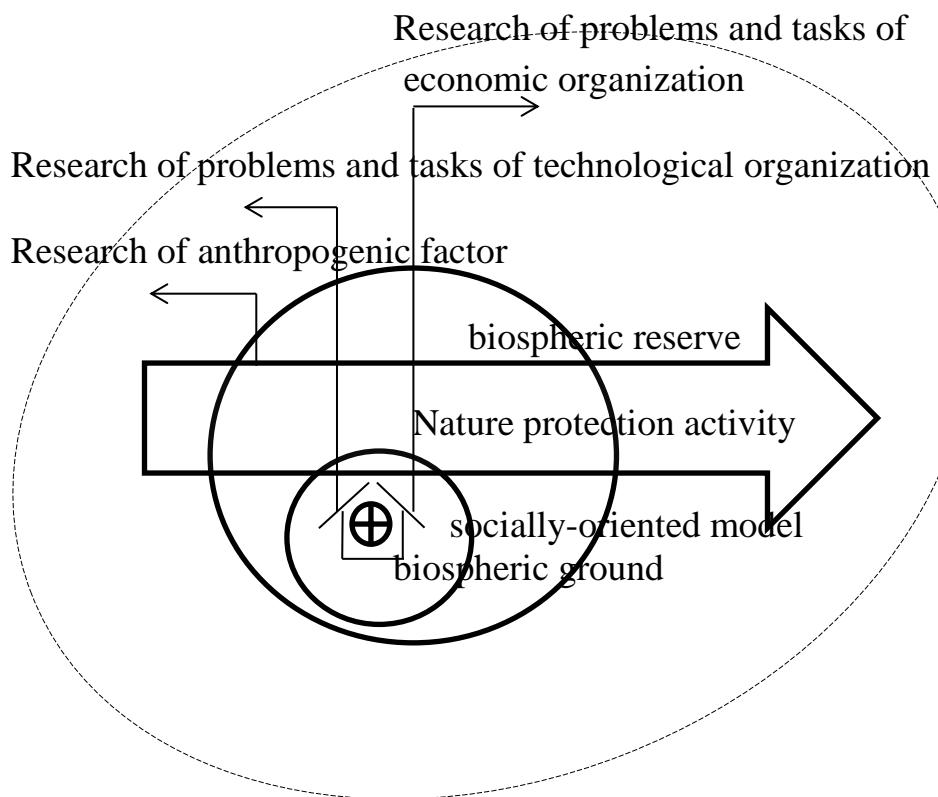


Figure 3. The biospheric reserve is an object of applied research of sustainable development
Source: it is made by authors.

Discussions



Formation of the discussion on the research object assumes distinguishing the program documents of UNESCO and materials of scientific research. Programs define the strategy of the future. Results of scientific research fix the situation in the present. The comparison of strategic reference points of sustainable development and modern situation in the field of scientific research of sustainable development processes defines the prospects of real research.

The identification of research problematic area is implemented taking into account the statements recorded in "The strategy of the program Man and Biosphere (MAB) for 2015 - 2025": "MAB will achieve that its Worldwide network of biospheric reserves will consist of efficiently functioning models of sustainable development" (The strategy of the program Man and Biosphere, 2015). Biospheric reserves are treated as special objects of the future into which progressive methods and forms of sustainable development are introduced: "Biospheric reserves represent model objects for approbation and introduction of cross-disciplinary approaches to the interpretation of changes happening in public and ecological systems and also to their management and processes of their interaction, including conflict prevention and biodiversity preservation" (The strategy of the program Man and Biosphere, 2015).

The problematic methods which are used in the research correspond to the methodology of "science of sustainable development": "The science about sustainable development uses problematically-oriented cross-disciplinary approaches aimed at deeper comprehension of the systems of coexistence and interaction of a human with environment and also influence of this interaction on the solution of the problems of sustainable development. The coverage of this science is defined by the problems in which solution this science is involved, not by the subjects that it uses. It relies on various fields of knowledge, including natural, social, medical and engineering sciences, and also on professional and practical experience in the sphere of economic activity, public administration and civil activity at workplaces. Problematically oriented techniques are characteristic to scientific approaches of sustainable development which are directed to encourage the dialogue between science and society, they aim at the interaction of public and natural systems, and also at the accounting of various knowledge forms that provide reasonable policy and sustainable development" (The strategy of program Man and Biosphere, 2015).

In the modern scientific literature the research of sustainable development, the research of natural territories and the research of biospheric reserves take their niches.

The analysis of actual content of scientific research concerning natural territories prioritizes the problems of biodiversity preservation. In typical work (Schöttkera et al., 2015) the dependence of a biodiversity condition on land use modes is considered: traditional intensive and sparing, economically compensated.

Certain research strictly keep the requirements of the organization of scientific information in a complex of the characteristics of "naturally scientific knowledge about concrete biospheric reserve". So, in the work of S. Hong (2015) "the biospheric reserve" is allocated as a management object, but is described through natural characteristics: "Natural environment and resources", "Environmental characteristics of tidal flat wetland", "Vegetation", "Uninhabited Islands", "Migratory birds", "Change in ecological landscape and social

environment". The questions of the "future" and suggestions to the "process of sustainable development" ("Features of social environment" and "Proposal for the sustainable development of SDBR") aren't based on the results of demographic research that fixes aging process and population outflow from islands. The main direction of the organization of sustainable development in this reserve is based on a distinctive ability of a human from other types that are placed in a reserve: "Unlike other animals of the natural realm, humans have utilized culture to obtain the things from the nature that they need for survival. To adapt to the natural environment, man must understand it and apply acquired knowledge in life" (Hong, 2015). Experience and knowledge of locals are treated as "an important economic resource". The transformation procedure of economic customs and mythological knowledge of native population in terms of economy of sustainable development should be provided by science: The Institution for Marine & Island Cultures of Mokpo National University and Shinan Culture Center, where a lot of attention is paid to educational programs for students and integration of local and scientific communities. This procedure has to form flexible civil society of the biospheric reserve in which structure the educational activity in the field of environment protection and specific projects of "beach" recreation for children and youth are possible to be realized.

Other methodological approach to the relations "the biospheric reserve and culture of sustainable development" is presented in the work "Building a community of practice" (Maureen et al., 2014). The practical orientation of this work does not interfere with the selection of a specific research object. This is the National cooperation of biospheric reserves of Canada and development of all forms of partnership promoting sustainable development goals. The feature of an "island structure" of the biospheric reserve of Korea and structural uniformity of 16 biospheric reserves of Canada assume the selection of scientific priorities in terms of sustainable development culture.

The object of modeling sustainable development in modern scientific research shows various communications of theoretical knowledge and practice. In the work (Zhang et al., 2016) the following is defined: a) a direct link of drainage enterprises with the issues of sustainable development (quality of water); b) feed-back of sustainable development with the reliability of drainage enterprises which is defined by means of key variables in three scenarios: "These three variables are investment in environmental protection, wastewater treatment fees (yuan/m³) and the growth rate of wastewater treatment capacity" (Zhang et al., 2017). In the work of L.M. Ngo & T.A. Trinh (2016) the principles of sustainable development: cooperation, concern of a natural factor, education value are used at the creation of the model "Building an intelligent and ecologically friendly city". According to this model, the university is a factor of transformation of urban environment. "Green university" in the city is treated as a private model of sustainable development. The economic perspective of modeling is presented in the work of an international research group R. Costanza et al. (2016). There is lack of established connection of classical indexes of GDP with the realization of principles of sustainable development. Authors model the new Sustainable Wellbeing Index (SWI) which is calculated in compliance with the panel of sustainable development goals - The UN Sustainable Development Goals (SDGs).



The modeled index is supposed to be used in the forecast of national wellbeing. In I.F. Kuzminov's (2009) work the original precedent of using model approach to the forests is represented, it is one of the most vulnerable object of environment protection. In the research aiming experience transferring the following is approved: if it is impossible to model the nature, it is necessary to model modern scientifically educated communities which can provide management of a forest resource of sustainable development: "The model forest is a forum intended to solve all problems, regarding forest on this territory. The received experience has to spread beyond its limits, in the regions with similar conditions. The core of the model forest is the team of experts with auxiliary staff who understand the nature of local problems well and they are looking for supporters to overcome these difficulties: locals, authorities, timber industrialists, forest owners and tenants, different commercial and non-profit organizations. Thus, the model forest performs the role of an intermediary and tries to find compromise solutions between stakeholders" (Kuzminov, 2009).

The summary of this discussion is a lack of consideration of biospheric reserve in modern science as a scientific subject in terms of which it is possible to receive new facts, knowledge, models of sustainable development, the experimental the practices of the organization of sustainable development. At the same time, there is the request for using humanistic principles of sustainable development in various systems and fields of activity. In the work of D.S. Duran, L.M. Artene & V. Duran (2015) it is represented like this: "The sustainable development of society refers to three major components of human existence: economical, ecological and human. The first component is essential, in the sense that the aim of social and economical activity is to satisfy human needs or desires, resulting for the three dimensions of human existence: biological (present in the interactions with the physical, natural environment), social/collective/collective (as a member of some social groups), rational/psychological/spiritual (induced by internal traits, particular to one human being). The relation between economical growth and the protection of the environment is an essential problem in the approaching sustainable development because the approach of economical growth not only by GDP, without trying a quantification of medium and long term advantages, resulting from environmental protection is only a basic form, unacceptable in sustainable development analysis. The human component in sustainable development has a major role, because the concept of equity incorporate several forms of manifestation in regards of sustainable evolution of human society". These theses were a form of a theoretical demonstration of a scientific forum (4th World Conference on Business, 2015).

Thus, scientific processes which will be organized in the biospheric reserve (in particular, by modeling means) have to be focused "for the three dimensions of human existence" now. Modeling forms of the organization of three key modalities of human existence in the conditions of biodiversity preservation in the biospheric reserve is the next step to the realization of sustainable development culture. Problem research and successful solutions of "configuration" processes, - natural and created by the person are not limited by traditional scientific subjects. "The biospheric reserve" is a subject of scientific research which potential is to receive functional organization of different knowledge forms.

Conclusion

The biospheric reserve was theoretically justified in the course of formation of sustainable development culture. At the same time, applied modeling and research of private forms and artifacts of sustainable development wasn't spread like industrial spheres and urban development. Content of sustainable development strategy in the network of biospheric reserves advances research and design methodology concerning organization aspect and studying complex needs of the person.

The consideration of "the biospheric reserve" as forms of the organization and an object of scientific research solves the problem to which system biospheric reserve refers. 1 - "The biospheric reserve" is a theoretical concept of sustainable development. 2 - The biospheric reserve is a territorial cell in the network of biospheric reserves. "The biospheric reserve" as a research object contains two necessary intensions. The first intention concerns activity of sustainable development in the procedures of modeling its processes. The second intention concerns tasks formation of new knowledge about opportunities, forms and effects of sustainable development. Using biospheric reserve as a scientific research object of sustainable development allows allocating borders of a specific scientific object which cultural bases are placed in the future while realization forms are in the present.

In the presented research the first steps in the historical process of establishing a new object in science on sustainable development are defined. Main "blocks" of a scientific object are designated, - "ontology", "models" and "methods". Further development of the biospheric reserve as a scientific object of sustainable development includes formation of analysis "units", transferring problems into tasks and scientific solutions. This methodology of research development is obligatory for all humanities.

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Notes on contributors

Gabibulla R. Khasaev is Doctor of Economics, Professor, Head of Department of Regional Economics and Management, Rector of Samara State University of Economics, Samara, Russia.

Marina Yu. Sadovenko is candidate of Pedagogics, director of "The methodology of scientific research and development", "Corporation "cultural Russia, holy ground" (abbreviated as "CORUS"), Samara, Russia.

Roman O. Isaev is a post-graduate student of the 2nd year training, Ontology and Theory of Knowledge Department), Samara National Research University, Samara, Russia.

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